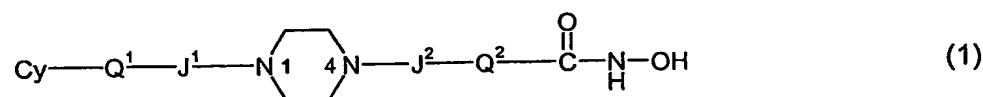


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CLAIMS

1. A compound of the formula:



wherein:

Cy is independently a cyclyl group;

Q¹ is independently a covalent bond or cyclyl leader group;

the piperazin-1,4-diyl group is optionally substituted;

J¹ is independently a covalent bond or -C(=O)-;

J² is independently -C(=O)- or -S(=O)₂-;

Q² is independently an acid leader group;

wherein:

Cy is independently:

C₃₋₂₀carbocyclyl,

C₃₋₂₀heterocyclyl, or

C₅₋₂₀aryl;

and is optionally substituted;

Q¹ is independently:

a covalent bond;

C₁₋₇alkylene; or

C₁₋₇alkylene-X-C₁₋₇alkylene, -X-C₁₋₇alkylene, or C₁₋₇alkylene-X-,

wherein X is -O- or -S-;

and is optionally substituted;

Q² is independently:

C₄₋₈alkylene;

and is optionally substituted;

and has a backbone length of at least 4 atoms;

or:

Q² is independently:

C₅₋₂₀arylene;

C₅₋₂₀arylene-C₁₋₇alkylene;

C₁₋₇alkylene-C₅₋₂₀arylene; or,

C₁₋₇alkylene-C₅₋₂₀arylene-C₁₋₇alkylene;

and is optionally substituted;

and has a backbone length of at least 4 atoms;

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or a pharmaceutically acceptable salt, solvate, amide, ester, ether, chemically protected form, or prodrug thereof.

* * *

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2. A compound according to claim 1, wherein the piperazin-1,4-diyl group is unsubstituted or substituted at one or more the 2-, 3-, 5-, and 6-positions with C₁₋₄alkyl.

10

* * *

3. A compound according to claim 1 or 2, wherein:
J¹ is a covalent bond and J² is -C(=O)-; or:
J¹ is -C(=O)- and J² is -C(=O)-; or:
15 J¹ is a covalent bond and J² is -S(=O)₂-.

4. A compound according to claim 1 or 2, wherein:
J¹ is a covalent bond; and J² is -C(=O)-.

20

5. A compound according to claim 1 or 2, wherein:
J¹ is -C(=O)-; and J² is -C(=O)-.

6. A compound according to claim 1 or 2, wherein:
J¹ is a covalent bond; and J² is -S(=O)₂-.

25

* * *

7. A compound according to any one of claims 1 to 6, wherein Q¹ is independently:
a covalent bond; or
30 a cyclyl leader group;
and is optionally substituted.

* * *

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8. A compound according to any one of claims 1 to 6, wherein Q¹ is independently a cyclyl leader group, and is optionally substituted.

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9. A compound according to any one of claims 1 to 6, wherein Q¹ is independently C₁₋₇alkylene, and is optionally substituted.
- 5 10. A compound according to any one of claims 1 to 6, wherein:
Q¹ is independently C₁₋₇alkylene, and is optionally substituted;
J¹ is independently a covalent bond;
J² is independently -C(=O)-.
- 10 11. A compound according to any one of claims 1 to 6, wherein:
Q¹ is independently C₁₋₇alkylene, and is optionally substituted;
J¹ is independently -C(=O)-;
J² is independently -C(=O)-.
- 15 12. A compound according to any one of claims 1 to 6, wherein:
Q¹ is independently C₁₋₇alkylene, and is optionally substituted;
J¹ is independently a covalent bond;
J² is independently -S(=O)₂-.
- 20 13. A compound according to any one of claims 1 to 6, wherein:
Q¹ is independently C₁₋₇alkylene, and is optionally substituted;
J¹ is independently -C(=O)-;
J² is independently -S(=O)₂-.
- 25 14. A compound according to any one of claims 1 to 13, wherein Q¹ is independently C₁₋₃alkylene, and is optionally substituted.
- * * *
- 30 15. A compound according to any one of claims 1 to 6, wherein Q¹ is independently :
C₁₋₇alkylene-X-C₁₋₇alkylene, -X-C₁₋₇alkylene, or C₁₋₇alkylene-X-;
wherein X is -O- or -S-;
and is optionally substituted.
- 35 16. A compound according to any one of claims 1 to 6, wherein Q¹ is independently :
C₁₋₃alkylene-X-C₁₋₃alkylene, -X-C₁₋₃alkylene, or C₁₋₃alkylene-X-;

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wherein X is -O- or -S-;
and is optionally substituted.

* * *

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17. A compound according to any one of claims 1 to 16, wherein Q¹, if other than a covalent bond, is substituted.

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18. A compound according to claim 17, wherein substituents on Q¹, if present, are independently: halo, hydroxy, ether, C₅₋₂₀aryl, acyl, amino, amido, acylamido, or oxo.

15

19. A compound according to claim 17, wherein substituents on Q¹, if present, are independently: -F, -Cl, -Br, -I, -OH, -OMe, -OEt, -OPr, -Ph, -NH₂, -CONH₂, or =O.

20. A compound according to any one of claims 1 to 16, wherein Q¹, if other than a covalent bond, is unsubstituted.

* * *

20

21. A compound according to any one of claims 1 to 6, wherein Q¹ is independently a covalent bond.

25

22. A compound according to any one of claims 1 to 6, wherein:
Q¹ is independently a covalent bond;
J¹ is independently a covalent bond;
J² is independently -C(=O)-.

30

23. A compound according to any one of claims 1 to 6, wherein:
Q¹ is independently a covalent bond;
J¹ is independently -C(=O)-;
J² is independently -C(=O)-.

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24. A compound according to any one of claims 1 to 6, wherein:

Q¹ is independently a covalent bond;

J¹ is independently a covalent bond;

J² is independently -S(=O)₂-.

5

25. A compound according to any one of claims 1 to 6, wherein:

Q¹ is independently a covalent bond;

J¹ is independently -C(=O)-;

J² is independently -S(=O)₂-.

FIG. 470A

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* * *

26. A compound according to any one of claims 1 to 25, wherein Q² is independently:

C₄₋₈alkylene;

and is optionally substituted;

and has a backbone length of at least 4 atoms.

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27. A compound according to any one of claims 1 to 25, wherein Q² is independently a saturated C₄₋₈alkylene group.

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28. A compound according to any one of claims 1 to 25, wherein Q² is independently a partially unsaturated C₄₋₈alkylene group.

29. A compound according to any one of claims 1 to 25, wherein Q² is independently an aliphatic C₄₋₈alkylene group

25

30. A compound according to any one of claims 1 to 25, wherein Q² is independently a linear C₄₋₈alkylene group.

30

31. A compound according to any one of claims 1 to 25, wherein Q² is independently a saturated aliphatic C₄₋₈alkylene group.

32. A compound according to any one of claims 1 to 25, wherein Q² is independently a saturated linear C₄₋₈alkylene group.

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33. A compound according to any one of claims 1 to 25, wherein Q² is independently a partially unsaturated aliphatic C₄₋₈alkylene group.

5 34. A compound according to any one of claims 1 to 25, wherein Q² is independently a partially unsaturated linear C₄₋₈alkylene group.

35. A compound according to any one of claims 1 to 25, wherein Q² is independently selected from:

10 -(CH₂)₅-; -(CH₂)₆-; -(CH₂)₇-; -(CH₂)₈-;

-CH(CH₃)CH₂CH₂CH₂CH₂-;

-CH₂CH₂CH₂CH₂CH(CH₃)-;

-CH₂CH₂CH₂CH=CH-; and,

-CH₂CH₂CH₂CH₂CH=CH-.

15 36. A compound according to any one of claims 1 to 25, wherein Q² is independently selected from:

-(CH₂)₅-, -(CH₂)₆-, -(CH₂)₇-, and -(CH₂)₈-.

* * *

20 37. A compound according to any one of claims 1 to 25, wherein Q², is independently:

C₅₋₂₀arylene;

C₅₋₂₀arylene-C₁₋₇alkylene;

C₁₋₇alkylene-C₅₋₂₀arylene;

25 C₁₋₇alkylene-C₅₋₂₀arylene-C₁₋₇alkylene; or,

and is optionally substituted;

and has a backbone length of at least 4 atoms.

38. A compound according to any one of claims 1 to 25, wherein Q², is independently:

30 C₅₋₂₀arylene;

and is optionally substituted;

and has a backbone length of at least 4 atoms.

39. A compound according to any one of claims 1 to 25, wherein Q², is independently:

35 C₅₋₂₀arylene-C₁₋₇alkylene;

C₁₋₇alkylene-C₅₋₂₀arylene;

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C₁₋₇alkylene-C₅₋₂₀arylene-C₁₋₇alkylene; or,
and is optionally substituted;
and has a backbone length of at least 4 atoms.

5 40. A compound according to any one of claims 1 to 25, wherein Q², is independently:
 C₅₋₆arylene-C₁₋₇alkylene;
 C₁₋₇alkylene-C₅₋₆arylene; or,
 C₁₋₇alkylene-C₅₋₆arylene-C₁₋₇alkylene;
 and is optionally substituted;
10 and has a backbone length of at least 4 atoms.

 41. A compound according to any one of claims 1 to 25, wherein Q², is independently:
 phenylene-C₁₋₇alkylene;
 C₁₋₇alkylene-phenylene; or,
15 C₁₋₇alkylene-phenylene-C₁₋₇alkylene;
 and is optionally substituted;
 and has a backbone length of at least 4 atoms.

 42. A compound according to any one of claims 1 to 25, wherein Q², is independently:
20 methylene-phenylene;
 ethylene-phenylene;
 phenylene-methylene;
 phenylene-ethylene;
 phenylene-ethenylene;
25 methylene-phenylene-methylene;
 methylene-phenylene-ethylene;
 methylene-phenylene-ethenylene;
 ethylene-phenylene-methylene;
 ethylene-phenylene-ethylene;
30 ethylene-phenylene-ethenylene;
 and is optionally substituted;
 and has a backbone length of at least 4 atoms.

* * *

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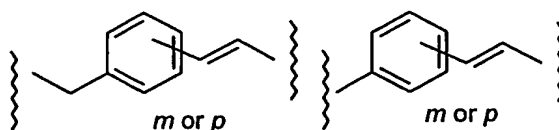
43. A compound according to claim 41 or 42, wherein the phenylene linkage is meta or para.

44. A compound according to claim 41 or 42, wherein the phenylene linkage is meta.

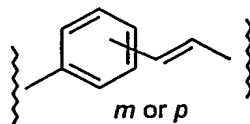
45. A compound according to claim 41 or 42, wherein the phenylene linkage is para.

* * *

46. A compound according to any one of claims 1 to 25, wherein Q^2 , is independently:



47. A compound according to any one of claims 1 to 25, wherein Q^2 , is independently:



* * *

48. A compound according to any one of claims 1 to 26 and 37 to 41, wherein Q^2 is substituted.

49. A compound according to claim 48, wherein substituents on Q^2 are independently:

- (1) ester;
- (2) amido;
- (3) acyl;
- (4) halo;
- (5) hydroxy;
- (6) ether;
- (7) C_{1-7} alkyl, including substituted C_{1-7} alkyl;
- (8) C_{5-20} aryl, including substituted C_{5-20} aryl;
- (9) sulfonyl;
- (10) sulfonamido;
- (11) amino;

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(12) morpholino;

(13) nitro;

(14) cyano.

5 50. A compound according to claim 48, wherein substituents on Q² are independently:

(1) -C(=O)OMe, -C(=O)OEt, -C(=O)OPr, -C(=O)OiPr, -C(=O)ONBu,

-C(=O)OsBu, -C(=O)OiBu, -C(=O)OtBu, -C(=O)ONPe;

-C(=O)OCH₂CH₂OH, -C(=O)OCH₂CH₂OMe, -C(=O)OCH₂CH₂OEt;

(2) -(C=O)NH₂, -(C=O)NMe₂, -(C=O)NEt₂, -(C=O)N(iPr)₂, -(C=O)N(CH₂CH₂OH)₂;

10 (3) -(C=O)Me, -(C=O)Et, -(C=O)-cHex, -(C=O)Ph;

(4) -F, -Cl, -Br, -I;

(5) -OH;

(6) -OMe, -OEt, -O(iPr), -O(tBu), -OPh;

-OCF₃, -OCH₂CF₃;

15 -OCH₂CH₂OH, -OCH₂CH₂OMe, -OCH₂CH₂OEt;

-OCH₂CH₂NH₂, -OCH₂CH₂NMe₂, -OCH₂CH₂N(iPr)₂;

-OPh, -OPh-Me, -OPh-OH, -OPh-OMe, -OPh-F, -OPh-Cl, -OPh-Br, -OPh-I;

(7) -Me, -Et, -nPr, -iPr, -nBu, -iBu, -sBu, -tBu, -nPe;

-CF₃, -CH₂CF₃;

20 -CH₂CH₂OH, -CH₂CH₂OMe, -CH₂CH₂OEt;

-CH₂CH₂NH₂, -CH₂CH₂NMe₂, -CH₂CH₂N(iPr)₂;

-CH₂-Ph;

(8) -Ph, -Ph-Me, -Ph-OH, -Ph-OMe, -Ph-F, -Ph-Cl, -Ph-Br, -Ph-I;

(9) -SO₂Me, -SO₂Et, -SO₂Ph;

25 (10) -SO₂NH₂, -SO₂NMe₂, -SO₂NEt₂;

(11) -NMe₂, -NEt₂;

(12) morpholino;

(13) -NO₂;

(14) -CN.

30

51. A compound according to any one of claims 1 to 47, wherein Q² is unsubstituted.

* * *

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52. A compound according to any one of claims 1 to 51, wherein Q² has a backbone of at least 5 atoms.

53. A compound according to any one of claims 1 to 51, wherein Q² has a backbone of at least 6 atoms.

5

* * *

54. A compound according to any one of claims 1 to 51, wherein Cy is independently C₃₋₂₀carbocyclyl; and is optionally substituted.

10

55. A compound according to any one of claims 1 to 51, wherein Cy is independently C₃₋₂₀carbocyclyl derived from one of the following: cyclopropane, cyclobutane, cyclopentane, cyclohexane, cyclopentene, cyclohexene, norbornane, adamantane, cyclopentanone, and cyclohexanone; and is optionally substituted.

15

56. A compound according to any one of claims 1 to 51, wherein Cy is independently C₃₋₂₀heterocyclyl; and is optionally substituted.

20

57. A compound according to any one of claims 1 to 51, wherein Cy is independently C₃₋₂₀heterocyclyl derived from one of the following: piperidine, azepine, tetrahydropyran, morpholine, azetidine, piperazine, imidazoline, piperazinedione, and oxazolinone; and is optionally substituted.

25

58. A compound according to any one of claims 1 to 51, wherein Cy is independently C₅₋₂₀aryl; and is optionally substituted.

59. A compound according to any one of claims 1 to 51, wherein Cy is independently C₅₋₂₀carboaryl or C₅₋₂₀heteroaryl; and is optionally substituted.

30

60. A compound according to any one of claims 1 to 51, wherein Cy is independently C₅₋₂₀aryl derived from one of the following: benzene, pyridine, furan, indole, pyrrole, imidazole, pyrimidine, pyrazine, pyridizine, naphthalene, quinoline, indole, benzimidazole, benzothiofuran, fluorene, acridine, and carbazole; and is optionally substituted.

61. A compound according to any one of claims 1 to 51, wherein Cy is independently an optionally substituted phenyl group.
- 5 62. A compound according to any one of claims 1 to 51, wherein Cy is optionally substituted with one or more substituents as defined in claim 49.
63. A compound according to any one of claims 1 to 51, wherein Cy is optionally substituted with one or more substituents as defined in claim 50.
- 10 64. A compound according to claim 1, selected from the following compounds, and pharmaceutically acceptable salts, solvates, amides, esters, ethers, chemically protected forms, and prodrugs thereof:

1	PX117402	28	PX118870	55	PX118911
2	PX117403	29	PX118871	56	PX118913
3	PX117404	30	PX118872	57	PX118914
4	PX117764	31	PX118873	58	PX118918
5	PX117768	32	PX118874	59	PX118927
6	PX118490	33	PX118875	60	PX118928
7	PX118491	34	PX118876	61	PX118929
8	PX118791	35	PX118877	62	PX118930
9	PX118792	36	PX118878	63	PX118931
10	PX118793	37	PX118882	64	PX118932
11	PX118794	38	PX118891	65	PX118933
12	PX118807	39	PX118892	66	PX118934
13	PX118810	40	PX118893	67	PX118935
14	PX118811	41	PX118894	68	PX118937
15	PX118812	42	PX118898	69	PX118951
16	PX118830	43	PX118899	70	PX118965
17	PX118831	44	PX118900	71	PX118967
18	PX118832	45	PX118901	72	PX118968
19	PX118844	46	PX118902	73	PX118969
20	PX118845	47	PX118903	74	PX118970
21	PX118846	48	PX118904	75	PX118971
22	PX118847	49	PX118905	76	PX118972
23	PX118848	50	PX118906	77	PX118978
24	PX118849	51	PX118907	78	PX118989
25	PX118850	52	PX118908	79	PX118990
26	PX118859	53	PX118909	80	PX118991
27	PX118860	54	PX118910	81	PX118994

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* * *

- 5 65. A composition comprising a compound according to any one of claims 1 to 64 and a pharmaceutically acceptable carrier.
66. A compound according to any one of claims 1 to 64 for use in a method of treatment of the human or animal body by therapy.
- 10 67. A compound according to any one of claims 1 to 64 for use in a method of treatment of a condition mediated by HDAC of the human or animal body by therapy.
68. A compound according to any one of claims 1 to 64 for use in a method of treatment of a proliferative condition of the human or animal body by therapy.
- 15 69. A compound according to any one of claims 1 to 64 for use in a method of treatment of cancer of the human or animal body by therapy.
70. A compound according to any one of claims 1 to 64 for use in a method of treatment of psoriasis of the human or animal body by therapy.
71. Use of a compound according to any one of claims 1 to 64 for the manufacture of a medicament for use in the treatment of a condition mediated by HDAC.
- 25 72. Use of a compound according to any one of claims 1 to 64 for the manufacture of a medicament for use in the treatment of a proliferative condition.
73. Use of a compound according to any one of claims 1 to 64 for the manufacture of a medicament for use in the treatment of cancer.
- 30 74. Use of a compound according to any one of claims 1 to 64 for the manufacture of a medicament for use in the treatment of psoriasis.
75. A method inhibiting HDAC in a cell comprising said cell with an effective amount of a compound according to any one of claims 1 to 64.
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76. A method for the treatment of a condition mediated by HDAC comprising administering to a subject suffering from a condition mediated by HDAC a therapeutically-effective amount of a compound according to any one of claims 1 to 64.
- 5
77. A method for the treatment of a proliferative condition comprising administering to a subject suffering from a proliferative condition a therapeutically-effective amount of a compound according to any one of claims 1 to 64.
- 10
78. A method for the treatment of cancer comprising administering to a subject suffering from cancer a therapeutically-effective amount of a compound according to any one of claims 1 to 64.
- 15
79. A method for the treatment of psoriasis comprising administering to a subject suffering from psoriasis a therapeutically-effective amount of a compound according to any one of claims 1 to 64.

* * *